The Whole Ground Truth

A Typical Day in the Field

Grab your partner, gear, GPS, maps, notes, camera, and compass. Don't forget your lunch. Now, hike for miles through forests and across lava fields. Reapply sunscreen. Try to navigate to the very center of a pre-selected 90 square meters circle. Record the plants you see (e.g. 40% of the circle is koa trees, 32% is pūkiawe, 18% is molasses grass, the rest is bare lava). Later, check to see if what you found matches what the professional mappers thought was in that circle. Take more notes, then adjust the vegetation map if needed.

Locate and go to the next circle. Repeat over 2,000 more times.

That's accuracy assessment (AA) for the vegetation mapping inventory.

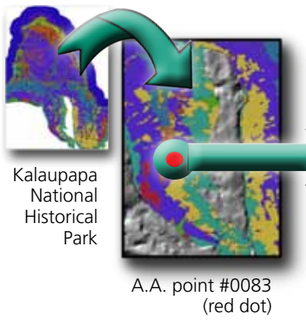
What is a Vegetation Map ?

The maps are snap-shots in time of the land cover (e.g. plants, buildings, lava) in a park. Developing a vegetation map is an extensive process which integrates field data, vegetation classification (e.g. area "X" is a koa/pūkiawe woodland), expert park knowledge, spatial analysis, and complex computer models. The layering of all this information leads to a map of the land cover across a park landscape. Vegetation maps are important tools to assist resource managers, and they provide comprehensive data for future research.

Remind Me What Accuracy Assessment is Again ?

The final stages of field work for vegetation mapping requires rapid physical assessments across the parks' landscapes to test the accuracy of the maps (known as accuracy assessment or AA). You may have heard it referred to as "ground-truthing".

At each Pacific Island Network (PACN) park, scores or hundreds of sites are visited by field crews. Armed with dichotomous keys and descriptions of the parks' vegetation communities, field crews hike far and wide to gather real, on-the-ground data to compare against the current vegetation maps. Afterwards, the accuracy assessment data is analyzed by the mappers (Kass Green & Associates) to determine how accurate the map is. This process helps to ensure that the best possible vegetation maps of the parks are born.



Kalaupapa National Historical Park

A.A. point #0083 (red dot)

In this instance, point #0083 in Waihanau Valley was assessed by the field crew as a "Kukui lowland wet forest". This assessment matched the vegetation classification on the map to the left. This point is deemed accurate.

The Crews

Accuracy assessment field work is extensive and requires help from many hands. Field crews are based at several parks. However, due to the substantial number of AA sites and the vast landscapes involved, a broadly collaborative effort is required to meet our goals. For instance, at Hawai'i Volcanoes National Park (HAVO), two (of three) field crew leaders are cooperating employees from the Research Corporation of the University of Hawai'i (RCUH). The HAVO team receives additional help from NPS Volunteers, NPS field crews from other parks, and HAVO Resource Management staff. Even PACN office employees get an occasional opportunity to get out in the wild and help the field teams. In total, for just the HAVO vegetation map inventory, at least 17 people have been involved in some aspect of the project.

The Assessment Continues

The vegetation mapping crew has completed accuracy assessment field work in several parks, however, final maps are still works-in-progress for most parks. Accuracy assessment is underway at HAVO, and field work will begin in November, 2013 at Haleakalā National Park.

–Meagan Selvig, RCUH
–Kathryn Akamine, RCUH

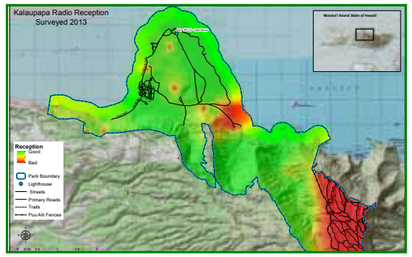
1,690 AA points are complete
(September 1, 2013)

Haleakalā NP: **TBD**
NP of American Samoa: **251**
Pu`ukoholā Heiau NHS: **57**
Kalaupapa NHP: **244**
Pu`uhonua o Hōnaunau NHP: **82**
American Memorial Park: **48**
Kaloko-Honokōhau NHP: **90**
War in the Pacific NHP: **163**
Hawai`i Volcanoes NP: **755** of **1,048** (planned)

Three Bonuses from This Project

Along with the valuable vegetation map data for park management and future research, the map project has provided us with some secondary benefits.

Better safe than sorry. The crew at HAVO tests their volcanic gas filters.



Can you hear me now?

While conducting A.A. at Kalaupapa NHP, the crew also performed radio and cell phone checks at all 244 points. The red indicates communications dead zones.

Enhancing Park Safety

Radio and cell phone receptivity maps.
In an effort to maximize the information gathered during the accuracy assessment work underway at several Hawaii parks, field staff has been testing radio receptivity and cell phone reception at each plot location while conducting the AA. The PACN GIS Specialist uses the receptivity data to run line-of-sight communications analysis to develop maps of high and low receptivity (above). These maps can be used by park resources management, fire management, and law enforcement to better understand communication limitations which makes the backcountry a safer place to visit.

Field crew safety preparation.
Due to the varied terrain, climate, natural hazards, and other factors in PACN parks, there are always special safety considerations. Each park has its own specific safety protocol. Before any work is attempted, a job hazard analysis is completed for existing and potential dangers that are inherent with working in the field. All hazards are considered and corrective measures are recommended prior to entering the field. Each field crew member is trained and outfitted with all the relevant safety gear and personal protective equipment. With daily safety discussions and up-to-date trainings, field crews are prepared for virtually any situation.

Invasive Plant Alerts

Although accuracy assessment field work is designed to be rapid, incidental observations in the far reaches of the park may be valuable to park resource managers. For example, during the AA field campaign at Kalaupapa National Historical Park, crews used the new Early Detection of Invasive Plant Species Cards as they walked the ridges and valleys of the park. They came across a handful of the invasive species from the cards while on the peninsula and along the trailheads. While some of these species are already being controlled by park staff (e.g. *Argemone mexicana*), others have not yet been targeted (e.g. *Stapelia gigantea*). PACN staff are happy that the cards are getting out into the field and serving as a tool for both education and, exactly what they are intended for, early detection of invasive plants.

Literally Awesome Places

Admittedly... this one is a little esoteric.
Field crews enjoy AA work because it takes them to some of the most amazing and least visited areas of the parks. After accounting for possible safety hazards and accessibility, AA sites are chosen at random. Essentially, crews navigate and hike all day through varied topography and vegetation while maintaining an ecological perspective, and observing vegetation changes along the way. The Nature Conservancy has identified nine different ecoregions within HAVO alone. The amazing places and sheer variety of landscapes create unique and beautiful experiences for the field crews every day.